

## REMARKS

### **Claim Rejections 35 USC § 102**

The Examiner's indication of allowability of claims 20, 21, 42 and 43 is acknowledged and appreciated. However, Applicants submit that Fan does not disclose the feature of "allocating dynamic resource in such a way that all VCs or groupings of VCs requesting dynamic resource are dynamically allocated requested dynamic resource up to at least the guaranteed dynamic resource which has been booked for them by the CAC".

Rather Fan discloses the calculation of a "single variable which would account for all the requirements (of a connection). ...The requirements are mapped onto a bandwidth or rate  $M_i$ , such that if connection  $i$  receives the rate  $M_i$ , then its QoS requirements will be met" (Column 10 lines 32-36).

In the current invention the CAC "comprises means for allocating static resource... and means for booking dynamic resource". Page 18, paragraph 4 explicitly states that "having this booked rate enables the delivery of QoS to subscribers by making sure each connection will always receive the rate it needs." In Fan the minimum rate  $M_i$  provides the QoS guarantee, however this is "provided by the Connection Admission Control (CAC) algorithm". The scheduler is not involved in allocating bandwidth contributing to QoS, it is only involved in allocating the bandwidth that has not been allocated as part of any connections  $M_i$  requirements.

The Examiner asserts that the static resource in the application corresponds to the resources that are guaranteed in Fan (last paragraph page 3). The Examiner then proceeds to assert that the guaranteed minimum rate in Fan is equated with the guaranteed dynamic resource (1<sup>st</sup> paragraph page 4).

Applicants submit that neither the static nor the guaranteed dynamic resource are the same type of resource, nor are either of them, if considered individually, the equivalent of the guaranteed minimum rate disclosed in Fan. Firstly, in the present invention the static resource and guaranteed dynamic resource combine to provide guaranteed QoS. In Fan, however, the guaranteed minimum rate ( $M_i$ ), also referred to by the Examiner as resources that are guaranteed, provides the guaranteed QoS (C10 L35-36).

Secondly, in the current invention the CAC "comprises means for allocating static resource...and... means for booking dynamic resource" (emphasis added). "The BoD is arranged to allocate dynamic resource". The BoD is able to allocate the dynamic resource booked by the CAC on a best effort basis (this is "dynamically allocated requested dynamic resource up to at least the guaranteed dynamic resource which has been booked for them by the CAC").

Fan, however, discloses that "preferably  $M_i$  would be provided by the Connection Admission Control" (P10 line 37). The scheduler, which the Examiner equates to BoD, "ensures that connection  $i$  receives its minimum rate" (C10 lines 41-42) i.e. the rate required to guarantee the connection its QoS and therefore equivalent to the total of the static resource and the booked dynamic resource of the current invention. It also shapes a connection's rates such that a connection "may transmit at a higher rate when unused bandwidth is available" (C12 lines 40-41). The CAC is not disclosed as "booking" any dynamic resource which may be reallocated by the scheduler if it is unused - note the connection in Fan is only disclosed as being able "transmit at a higher rate when unused bandwidth is available" and the scheduler "ensures that a connection  $i$  receives its minimum rate" - disclosed as allocating anything booked by the CAC.

Finally, in Fan a connection does not receive any less bandwidth than the minimum rate ( $M_i$ ). In fact, Fan explicitly states that "scheduler ensures that connection  $i$

receives its minimum rate" (C10 lines 41-42). In the current invention however, "VCs requesting dynamic resource are dynamically allocated requested dynamic resource up to at least the guaranteed dynamic resource" (emphasis added). Hence, if a connection does not request any part of its guaranteed dynamic resource then this resource can be re-allocated to other connections on the same uplink by the BoD controller, even though the booking of the guaranteed dynamic resource by the CAC is required to guarantee QoS to the connection.

It is clear that the current invention provides much more flexible allocation of bandwidth than the invention outlined in Fan. For example, the presence of a guaranteed booked rate allows each connection to obtain the rate it requires to deliver QoS. Yet, if any of the booked rate isn't required it can be made available to other connections within the same uplink. In Fan, however, any rate allocated to a connection in order to guarantee its quality of service but not used by that connection remains unused.

In addition to this it is submitted that the competing classes of Fan are not requesting resources through the arrival of cells within those classes. In "Essentials of ATM Networks and Services" by Oliver Ibe published in 1998, (one of the standard texts on ATM) flow control of data through a connection is described. Pages 100 - 114 are attached, for convenience. In the Rate-Based flow control scheme a forward resource management cell (FRM) is sent by the source of the data transmission "at regular intervals (after a predefined number of data cells, usually after eight data cells)". Ibe states that "the forward resource management cell of the rate-based scheme is essentially a request for a new transmission rate". It is clearly not, as maintained by the Examiner, equivalent to the arrival of cells at a switch.

Thus, the applicants submit that claim 1 is patentable over Fan.

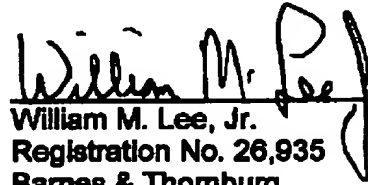
Claims 13 and 23 outline the same features as claim 1: "allocating dynamic resource in such a way that all VCs or groupings of VCs requesting dynamic resource are dynamically allocated requested dynamic resource up to at least the guaranteed dynamic resource which has been booked for them by the CAC". Thus it is submitted that these claims are not anticipated.

Applicants submit that claims 2 to 12, 14 to 19, 24 to 41 are patentable at least by virtue of their dependencies.

Given the above, it is believed that this application is in condition for allowance, and such action is solicited.

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Respectfully submitted,



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